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THE PRESIDENT'S SCIENCE ADVISORY COMMITTEE  
EXECUTIVE OFFICE BUILDING  
Washington 25, D. C.

April 16, 1962

MEMORANDUM FOR: Jerome B. Wiesner

SUBJECT: Reoriented MIDAS Program

The AICBM Panel has reviewed the Air Force proposal to reorient the MIDAS program. This reoriented program was developed as a result of the study carried out by a DDR&E committee on which several members of this Panel participated. The proposed program responds to the concerns of this Panel only in part. In particular, the following problems remain:

(1) The Air Force plan responded to the adverse comments concerning the expected unreliability of the Series 4 flight program by proposing a somewhat simplified version for these flights by reducing the number of components and eliminating certain of the station-keeping and stabilizing elements. However, contrary to the recommendation from DDR&E and members of this committee, the Series 4 flight is still conceived to be a pre-operational prototype and incorporates the same payloads which were specified several years ago. Without knowing the technical details of the simplified model, we cannot of course, identify in detail to what extent the operational objectives of the Series 4 flight program interfere with the use of these vehicles for R&D. We suspect, however, that this a serious matter since the operational payloads have a very large number of infra-red channels which

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are difficult to standardize to give quantitative infra-red information. We also suspect that these flights involve a very large fraction of the budget and will again dominate the total MIDAS schedule to the detriment of an intensive program aimed at answering the really open questions.

(2) The Panel was informed that recent results indicate that only large ICBM's fueled by LOX-Kerosene mixtures can be expected to give a signal well above the natural system noise of MIDAS. Specifically, recent observation of TITAN II revealed that vehicles using some storable propellants probably will give inadequate signals. Moreover, experiments on suppression of infra-red signals either by additives or using a fuel-rich mixture appear to make it possible to reduce signals from LOX-Kerosene mixtures below detectability. This makes it dubious whether the current payload configuration can detect any missiles other than large LOX-Kerosene fueled ICBM's which do not incorporate infra-red suppression.

(3) In addition, the questions of external cloud background are still unsolved. We do not identify an intensive program to really evaluate the background problem or study the data reduction program in relation to identifying missile tracks against a cloud background.

(4) Considering the fact that MIDAS now offers only limited hope of success and that the value of an early warning system will decrease in time due to the phasing out of the manned bomber components of our strategic forces, we believe that alternative early solutions to comprehensive early warning should be considered intensively. In particular, deployment of BMEWS in Asia or

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possibly in the Southern Hemisphere should be looked at seriously. We note that rough estimates of the cost of BMEWS and the cost of the continuing research and development program for MIDAS for fiscal '64 and '65 are both in the neighborhood of a half billion dollars. We, therefore, tend to believe that the whole question concerning the future of MIDAS will have to be considered very seriously next year, taking into account progress of the MIDAS R&D program, studies of southern BMEWS, and the expectancy of over-the-horizon radar.

(5) It is not clear to us that even a successful Series 4 program will supply the data necessary for evaluation of above-the-horizon operation or for different bands of the spectrum. It should be required that the MIDAS program generate such experimental information so that, if the present MIDAS program does not meet the need for early warning, we would have some basis for a new system.

(6) Despite serious criticisms of the management of MIDAS, the Air Force does not propose to change its organization. We are informed that there will be six layers of command between the contractor and the Assistant Secretary for R&D's office in the Air Force. Although Aerospace Corporation is to have some degree of technical management responsibility, it is not clear to us whether this responsibility will deal only with the systems aspects of MIDAS or will actually go deep enough to influence the real deficiencies in the program which are in the research area.

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(7) Since the program proposed by the Air Force for DDR&E approval is \$44 million above the fiscal '63 funds available, we understand that DDR&E at present is proposing to ask the Air Force to re-program this money within their own house and to identify where the money would come from. We would recommend, however, that DDR&E also undertake a detailed technical look as to the real technical plans for this program, in particular in connection with the Series 4 flights, before approving the Air Force plan. Individual members of the panel have expressed their willingness to participate in such a review.

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